U.S. EPA's GHG Inventory Capacity Building Activities and Lessons Learned

William N. Irving
Climate Change Division
Office of Atmospheric Programs
US Environmental Protection Agency

November 12, 2013

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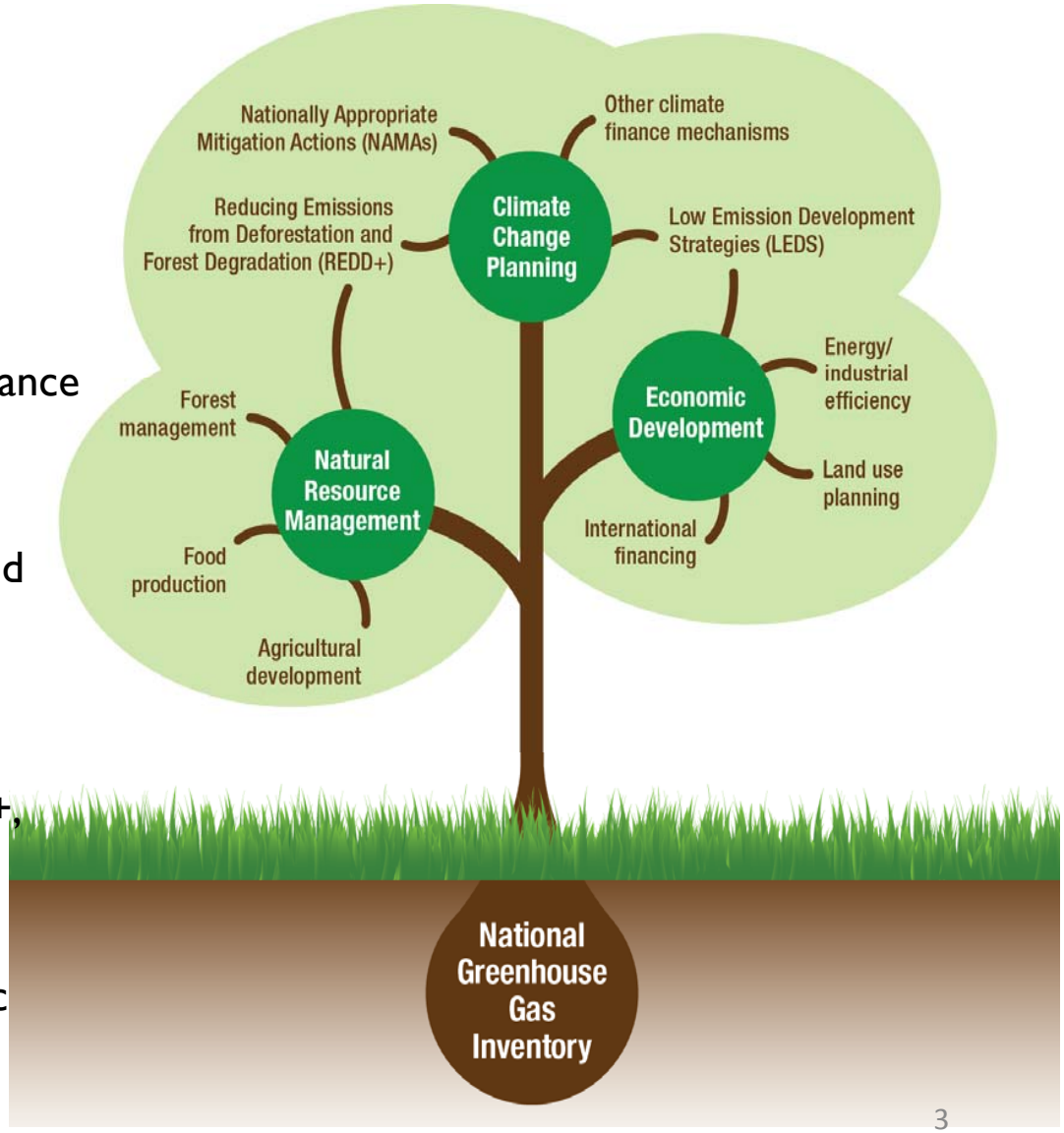
Overview

- Why compile a national GHG inventory?
- US EPA's GHG inventory capacity building regions and approach
- Tools and how the US EPA can help
- Lessons Learned
- Additional Resources and Links

Build a Solid Foundation for Low Emission Growth

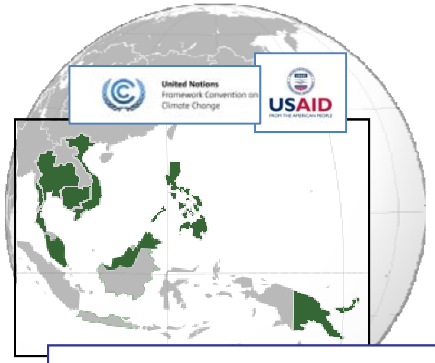
"Can't manage what you don't measure"

- Understand national GHG emissions, removals and trends
- Identify cost-effective policies and programs to reduce emissions, but enhance climate resiliency
- Meet international obligations and participate in future GHG programs and agreements (UNFCCC reporting)
- Enhance environmental integrity of mitigation options (baselines, BAU emissions/projections, NAMAS, REDD+, and LEDS, etc.)
- Useful indicators for environmental assessment and management, economic development and planning

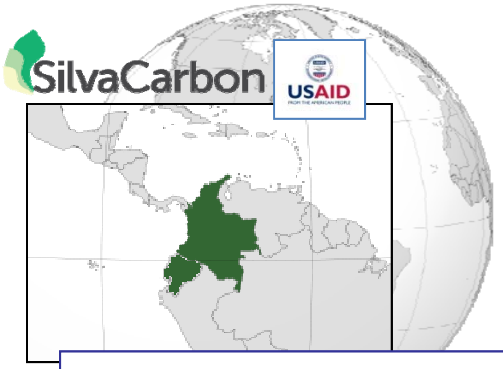


Capacity Building Efforts to Date

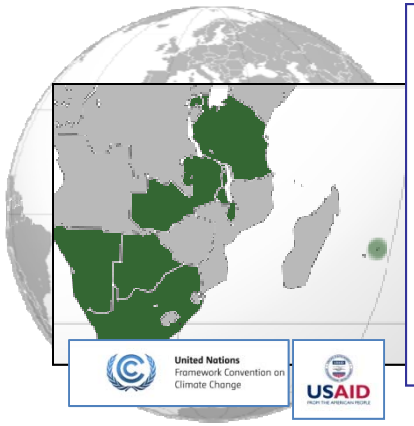
Central America : First regional project. Developed our current approach and designed our tools.
Phase I: 2004-2007
Phase II: 2007-2010



South East Asia: Currently 6 country project. *Strong partnership with UNFCCC*. Applied the lessons and tools developed in CA. Phase I: 2008-2010. Phase II: 2011-2014.



Andean Region: Scoping trips to Colombia, Peru and Ecuador. Initiating work with Colombia. Applying the lessons learned and tools developed for other regions.
Phase I: 2012-2015.



Eastern and Southern Africa: Currently 8 country project. Apply the lessons and tools developed in other regions. *Strong partnerships with UNFCCC, CD-REDD*. Phase I: 2011-2014.

EPA leads technical implementation. USAID is key partner in all regions, providing funding and overall planning and implementation support.

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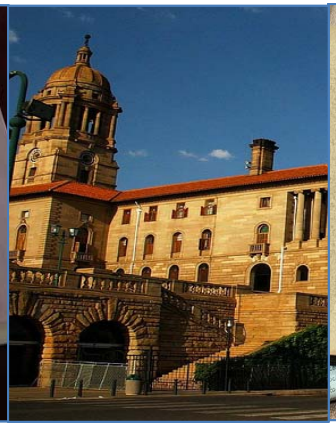
NA-1 countries have made progress, technical capacity exists, but some challenges remain

Small teams with limited resources and multiple roles

Insufficient records from previous inventories



Need for stronger institutional arrangements

Incomplete or non-existent activity data

Lack of country-specific emission factors

Difficulty retaining expertise

A Simple Approach to GHG Inventory Capacity Building

- **Goals**
  - Assist countries to develop a high quality GHG inventories (transparent, accurate, consistent, complete and comparable), with focus on key sectors, such as Agriculture and Forestry (LULUCF)
  - Build solid foundation for more regular reporting and steadily improving inventory quality

- **General approach**
  - Improve institutional capacity of a country to establish a sustainable National GHG Inventory System
  - Provide technical assistance to apply and improve methods, activity data collection and documentation
  - Cannot "train" experts on methods alone—they must *learn* by *doing*

Steps for GHG Inventory Capacity Building

Scoping/select Project GHG Inventory Team

Understand country/regional objectives, **assess institutional arrangements**, select project **coordination team**

Initial Planning session

Country(s) present current inventories; review inventory system and estimation methodologies; and **identify activity data (AD) gaps**

Working sessions

Assist with cross-cutting inventory management tasks, assembling AD; **produce inventory** and document the process/results

Wrap-up Session

Country(s) **present improved inventories** and discuss next steps

EPA and Country Inventory Team Partnership

Establish Institutional Arrangements, define inventory scope and improvements

Define data documenta-tion, QA/QC, and archiving procedures

Data collection, generate Estimates and Draft Report

Review QA/QC, Key Category Analysis

Finalize Report

Moving forward:

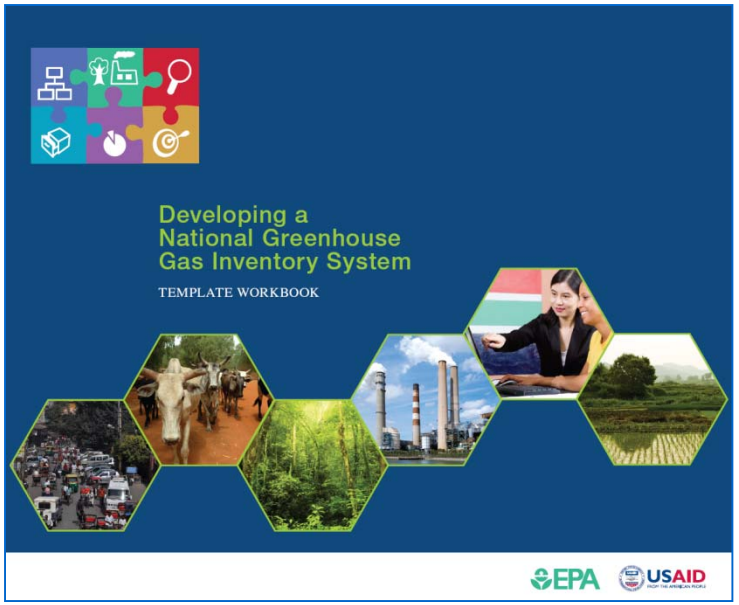
Inventory Improve-ment Plan

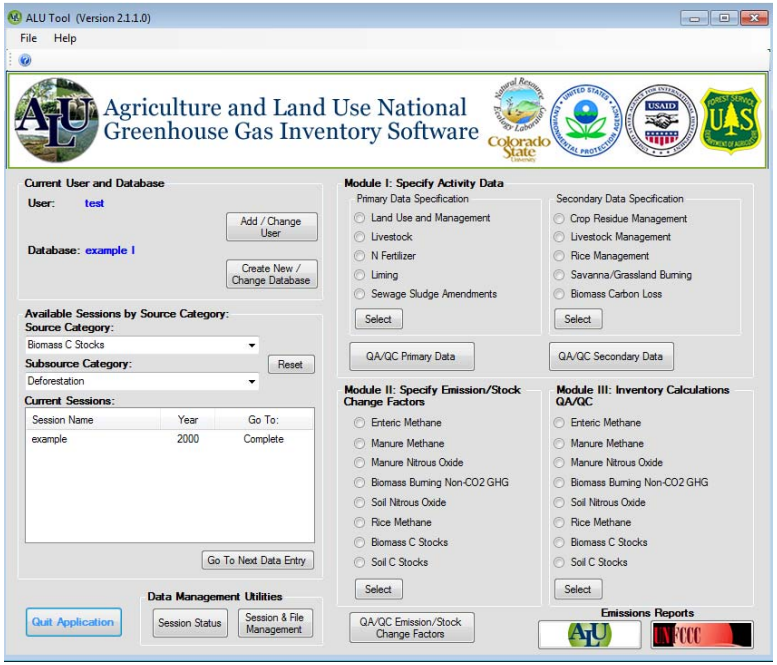
EPA approach designed to support countries along inventory preparation process

Capacity Building Tools

National System Templates

Helps to document, institutionalize and streamline the inventory management process





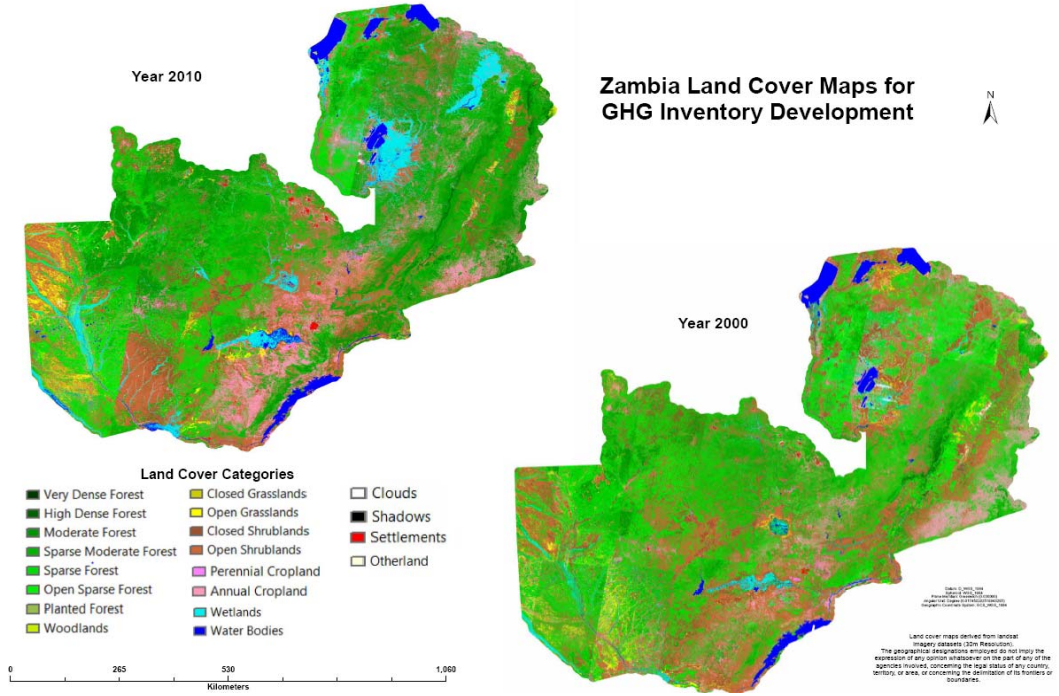
ALU Tool

Helps to compile AD, perform calculations, implement QA/QC procedures and produce reports

Example: Overcoming Data Barriers

- **Developing accurate and consistent land use maps has been a major focus of recent EPA assistance, in particular the ESA project**
  - Lack of good quality maps and land use/conversion data is a key obstacle for many countries in preparing a complete and consistent representation of their land base as required by the IPCC Guidelines.

MAPPING LAND-COVER FOR GENERATING LAND USE CHANGE

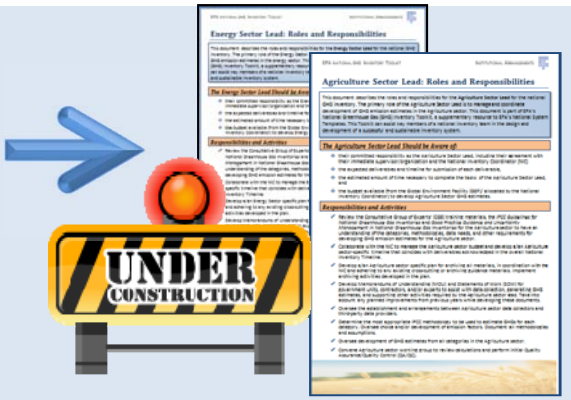


Source: Prof. F.D. Yamba. (2013) Zambia's Inventory Management System and Contribution of the Project to the System including the use of Satellite Imagery. [Power Point Slides]. Copy provided by UNFCCC, slides presented at UNFCCC Side Event June 7, 2013.

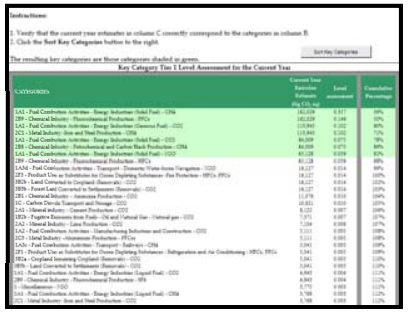
Additional Tools

1) **Institutional Arrangements Toolkit (*Under Development, available end of year*)**

- Example MoU for data providers
- Sample TORs for sectoral experts/reviewers
- Budget templates
- Timeline templates



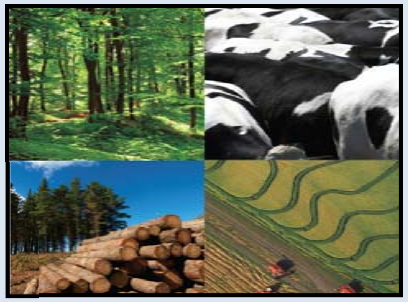
2) Key Category Analysis (KCA) Tool: Enables a country to determine the most important emissions categories and identify areas for improving estimates and moving to higher Tier IPCC methods (consistent with 2006 GL)



3) Providing technical assistance on methods, activity data collection, and documentation.

- **Activity Data Assessment Questionnaires**
  Helps assess a country's activity data availability, gaps and needs, (Energy, Agriculture/LULUCF, Waste, etc.)

- **Agriculture, Land-Use (ALU) Data Workbooks**
  ALU data workbooks facilitate data collection and organization for entry into calculation tools



Lessons Learned

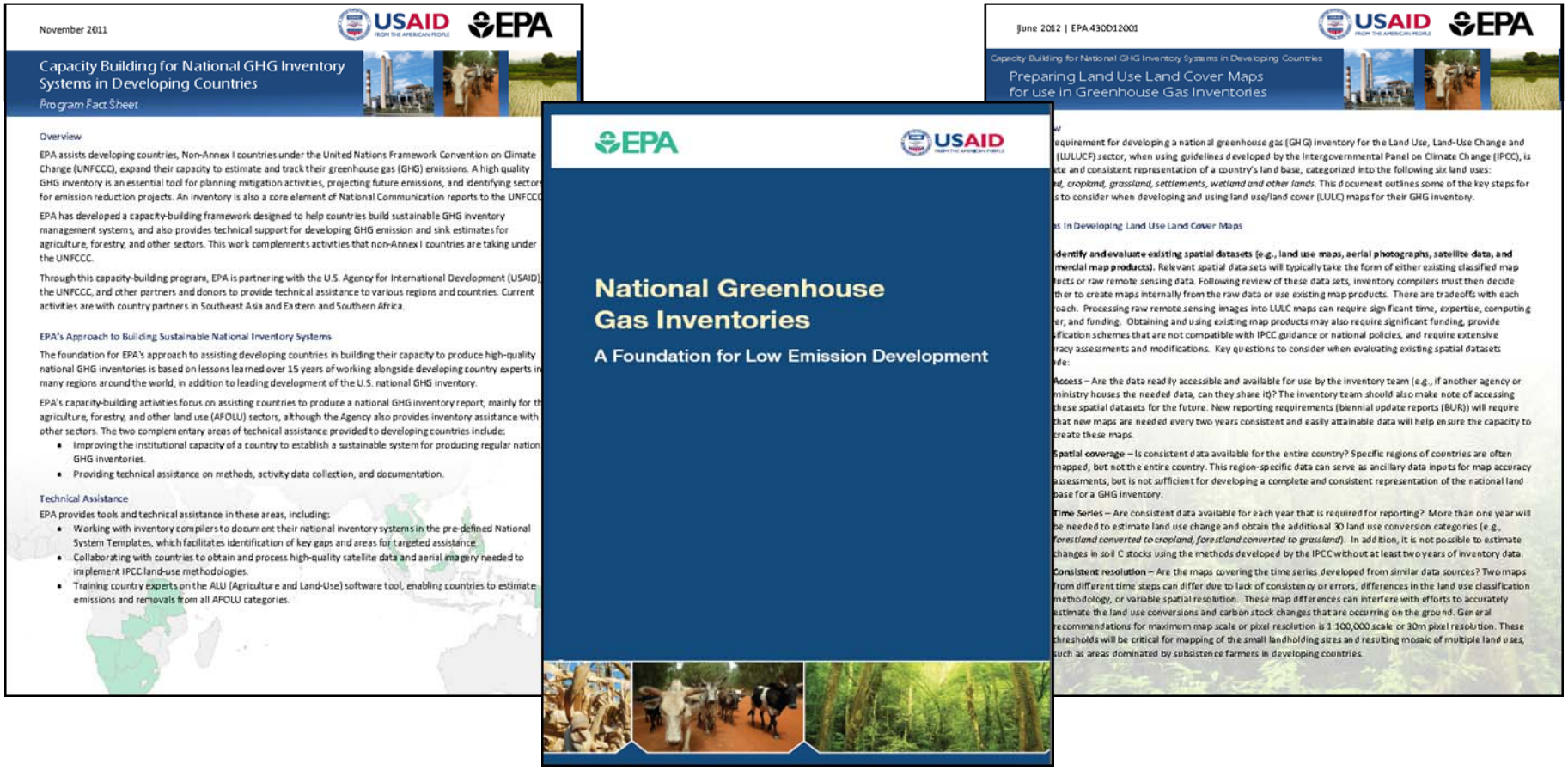
- ***Developing a high quality inventory is not*** easy—but we all know there are many reasons to do it!
- A dedicated Regional/National Project Coordinator to oversee day-to-day activities is essential
- GEF funding is necessary to complement EPA technical assistance
  - Enables countries to engage experts to supplement limited human resources
- Initial emphasis on ***institutional arrangements is necessary*** to support **data** needs to calculate emissions now and in future for UNFCCC reporting (NC and BUR)
  - EPA's Developing a National Inventory Systems Template Workbook is useful and provides a foundation for planning and designing a national GHG inventory system, in particular institutional arrangements
    - Facilitates effective organization and management of GHG inventory; but dedicated effort is required
    - Promotes transparency, accuracy, consistency, completeness, and comparability (IPCC Good Practice)
    - Does not solve all problems, but helps create "institutional memory" or continuity
    - Reduces future costs/effort
    - Applicable at national or sub-national level
    - ***Mentoring support*** is required to apply/translate templates from "paper system" to functional components of national inventory system to support UNFCCC reporting

Lessons Learned cont.

- Inventory teams ***learn by doing***, not by just training
  - Hands-on one-on-one work using the country data is necessary to truly enhance technical capacity
- Emphasis should also be on activity data
  - Must work with the country to help them overcome barriers with data collection (e.g. facilitating discussions with data providers, designing expert knowledge surveys, etc.)
- Each country is unique—***flexibility*** is important
  - Regional meetings facilitate exchange of expertise, inventory management strategies
  - Bilateral assistance is important to engage all relevant experts to effectively support the country-specific inventory process (e.g. institutional arrangements, data gaps, etc.)
- A ***sustained, long-term effort*** is necessary for success
- ***Dedication*** from the National Inventory team is crucial!

Helpful Resources & Links

- **Download fact sheets on benefits of national GHG inventories, EPA capacity building activities, and preparing land use land cover maps** from the EPA Website www.epa.gov/climatechange/capacitybuilding



Helpful Resources & Links we share with partners

- **Receive technical assistance on GHG inventories** from the EPA : http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html
- Download the **Agriculture and Land Use (ALU) National GHG Inventory software**: http://www.nrel.colostate.edu/projects/ALUsoftware/
  - Contains recent updates and demonstration videos!
- **Apply for financial support** from the Global Environment Facility for:
  - National Communications: http://www.thegef.org/gef/CC_direct_access
  - Biennial Update Reports:

    http://www.thegef.org/gef/guideline/biennial_update_reports_parties_UNFCCC
- **Participate in training** from the UNFCCC Consultative Group of Experts: http://unfccc.int/national_reports/non-annex_i_natcom/cge/items/2608.php
- Download the **UNDP NC Support Program handbook**, *Managing the National Greenhouse Gas Inventory Process*: http://ncsp.undp.org/document/managing-national-greenhouse-gas-inventory-process

EPA is also coordinating with other USG Initiatives with a component on GHG inventories

- LEAD – Low Emission Asian Development
  - Focus on LEDS implementation and development, including GHG Inventories
    - 12 Countries: Bangladesh, Cambodia, India, Indonesia, Laos, Malaysia, Nepal, Papua New Guinea, Philippines, Thailand, Vietnam
    - http://www.lowemissionsasia.org

- SilvaCarbon
  - Focus on improve monitoring of forest and terrestrial carbon
    - Partner Countries: Colombia, Peru, Ecuador, Gabon, Vietam,
    - Regional: Congo Basin, SE Asia
    - http://www.silvacarbon.org/

- EC-LEDS (Enhancing Capacity for Low Emission Development Strategies)
  - Focus on LEDS implementation and development, including GHG Inventories
    - Over 20 countries including Albania, Bangladesh, Colombia, Costa Rica, Gabon, Indonesia, Kenya, Macedonia, Mexico, Moldova, the Philippines, Serbia, and Vietnam

Thank you for your attention!

irving.bill@epa.gov
+202.343.9065

U.S. EPA Inventory Preparation Tools
http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html

Extra Slides

We have taken key elements of the IPCC and UNFCCC guidance and condensed them

…into an easy-to-use National Template Workbook

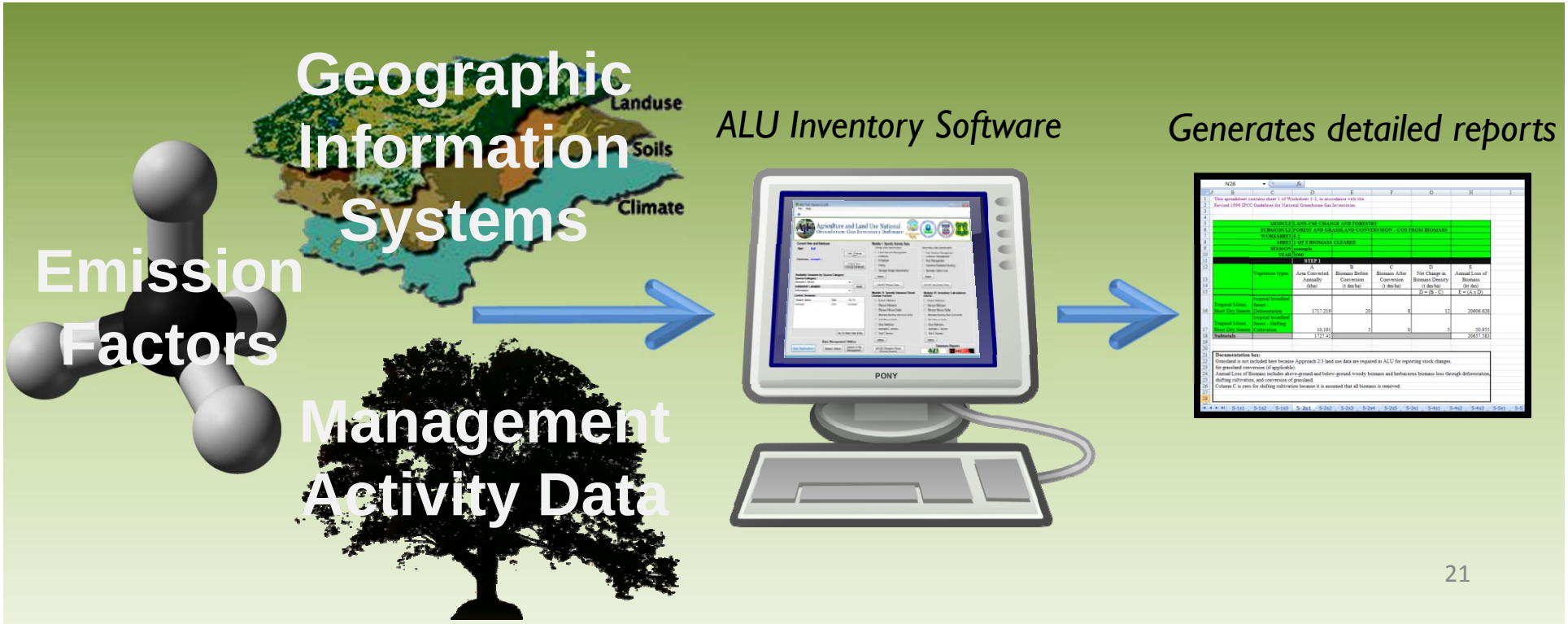
Tool 1A: National System Template Workbook

- Institutional Arrangements
- Source-by-Source Background Document
- Description of QA/QC Procedures
- Description of Archiving System
- Key Category Analysis
- National Inventory Improvement Plan

- Based on inventory systems developed in concert with other countries
- **Each template becomes a chapter of the National Inventory**
- Each template provides documentation of critical building blocks

Agriculture and Land Use (ALU) Software

- Estimates emissions and removals for Agriculture and LULUCF through a user-friendly interface
- Based on IPCC methods (1996 GL, GPG & 2006 GL)
- IPCC Tier 1 and 2 approaches
- Produces emission reports and archives inputs and calculations



ALU Software – main screen